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10/709,173	04/19/2004	Robert Frederick Benson	1372.151.PRC	3172
21901	7590	04/28/2009		
SMITH HOPEN, PA 180 PINE AVENUE NORTH OLDSMAR, FL 34677			EXAMINER WALKER, KEITH D	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/709,173	<b>Applicant(s)</b> BENSON ET AL.	
	<b>Examiner</b> KEITH WALKER	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-9,12-14,16-40 and 43 is/are pending in the application.
- 4a) Of the above claim(s) 18-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-9,12-14,16,17,39,40 and 43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Detailed Action***

***Response to Amendment***

Claims 1, 3-9, 12-14, 16-40 & 43 are pending in the application and claims 18-38 are withdrawn from consideration. Claims 1, 3-9, 12-14, 16, 17, 39-40 & 43 are pending examination as discussed below.

***Claim Rejections - 35 USC § 112***

The rejection of claims 1, 3-9, 12-14, 16, 17 & 39-40 under 35 USC 112, first paragraph are withdrawn due to the amendment.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3-8, 12-14, 16, 17, 39, 40 & 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,991,876 (Narang) in view of US 5,476,730 (Okamura) and US 4,001,043 (Momyer).

Narang teaches an electrochemical cell comprising an aluminum anode, a solid alkali metal peroxide cathode comprising sodium peroxide particulates and a separator comprising a fiberglass cloth between the anode and cathode (Fig. 1; 4:7-10, 6:4-12, 8:1-8, Claim 1, Examples). The cathode comprises a nickel current collector and the

use of a glass woven separator between the anode and the cathode (Fig. 1; Examples). Since aluminum is taught as the anode material and not an alloy of aluminum, the teaching is interpreted as being pure aluminum.

Narang is silent to the arrangement of the components such that the cathode current collector is between the fiberglass cloth and the solid alkali peroxide.

Okamura teaches an air cell having a configuration with an anode, glass separator, cathode current collector and cathode active material. The cathode current collector is a metal mesh, the anode is aluminum, the separator is a glass cloth and the electrolyte is potassium chloride (Fig. 1; 2:1-40). So Okamura teaches arranging the similar components in a different manner based on design choice.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the arrangement of components based on the desired design of the battery. The two prior art illustrate that the arrangement does not alter the operation of the battery and as such combining the battery components according to known designs would be obvious to one skilled in the art at the time of the invention. Combining prior art elements according to known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).

Regarding claim 43, while a second fiberglass cloth is not taught between the collector and the peroxide material, the inclusion of a second fiberglass cloth would be obvious to one skilled in the art because the fiberglass cloth absorbs the liquid electrolyte. By including another cloth, more electrolyte is brought in contact with the

cathode material allowing for increased contact and therefore increased ionic conductance between the anode and cathode.

The limitation of releasing energy upon introduction of an aqueous activator is intended use and/or functional language and is not a positive limitation that further limits the product. While intended use recitations and other types of functional language are not entirely disregarded, the intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. The manner of operating the device does not differentiate an apparatus claim from the prior art (MPEP § 2114). As the same anode, cathode and separator as claimed are taught by the prior art, the addition of an aqueous activator would inherently operate the battery in the same manner.

Regarding claims 12-14, as discussed above, since the aqueous activator is not positively claimed and required by the claim language, the composition of the activator is also not further limiting to the claimed product.

Regarding claims 16, 17 & 39, the disclosure of Narang differs from Applicant's claims in that Narang does not specifically disclose the ratio of the electrode bulk surface area of the anode to the electrode bulk surface area of the cathode. Nevertheless, it is well known in that art that the optimal ratio is dependent upon physical configuration of the galvanic cell and the chemical reactions present.

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Therefore, it would have been within the skill of the ordinary artisan to adjust the ratio of the electrode bulk surface area of the anode to the electrode bulk surface area of the cathode in accordance to the configuration of the electrochemical and the kinetics of the reaction. Differences in prior art ranges are unpatentable unless they produce a new and unexpected result, which is different in kind and not merely in degree from the results of the prior art. Discovery of optimum ranges of a result effective variable in a known process is ordinarily within the skill of art and selection of the optimum ranges within the general condition is obvious. (MPEP 2144.05)

Narang is silent to a silver mesh current collector and an aqueous electrolyte.

Momyer teaches a metal-water electrochemical cell comprising a lithium anode, a silver current collector and a electrolyte comprising soluble peroxide ions, including hydrogen peroxide, sodium peroxide, sodium super oxide, lithium peroxide, potassium peroxide and potassium super oxide (Claims 1, 2; 4:59-68). A silver mesh current collector is taught as the preferred choice for peroxide reaction cells, but is also taught as equivalent to nickel current collectors (4:45-55). Momyer teaches it would be obvious to one skilled in the art to incorporate the same electrode configuration with an aqueous electrolyte. Combining prior art elements according to known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).

Therefore it would be obvious to one skilled in the art to use the preferred silver mesh current collector of Momyer for the nickel current collector of Narang to improve cell performance. The solid silver mesh current collector is equivalent to a silver plated

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copper wire. While the preferred embodiments of Narang use non-aqueous electrolytes, the use of aqueous electrolytes is well-known in the art and it would be obvious to one skilled in the art to pair the electrodes with appropriate electrolyte compositions. For instance, since the Narang cell is preferably a lithium cell, the preferred electrolyte is a non-aqueous electrolyte.

2. Claims 1, 3-5, 7-9, 12-14, 16, 17, 39, 40 & 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,005,246 (Schiffer) in view of US 5,476,730 (Okamura) and US 7,045,252 (Christian).

Schiffer teaches a reserve battery which comprises an aluminum anode, a cathode of silver oxide, a separator of fibrous material or paper and a potassium chloride electrolyte (Fig. 1; 2:45-65, 3:1-35). The battery is activated by adding water or other aqueous electrolyte to the battery (3:60-4:30). Since the anode is taught as being either aluminum or aluminum alloy, the recitation of aluminum is interpreted as being pure aluminum. Furthermore, it would be obvious to one skilled in the art to interpret the teaching of aluminum as pure since the prior art distinguishes between the pure metal and an alloy of the metal.

Schiffer is silent to the cathode being sodium peroxide.

Christian teaches alkaline batteries with similar chemical characteristics. Cathode materials include silver oxide or peroxide salts such as sodium peroxide and the electrolyte is an aqueous solution of potassium hydroxide (Abstract, 3:15-20, 4:55-

65). Silver oxide and sodium peroxide are taught to be functionally equivalent soluble peroxides used as the same material in an electrochemical cell.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the silver oxide of Schiffer with the functional equivalent of sodium peroxide as taught by Christian.

Schiffer is silent to a fiberglass cloth separator and a current collector between the fiberglass cloth and the solid alkali peroxide.

Okamura teaches an electrochemical cell with an aluminum anode and a separator made of fiberglass or paper (2:20-30). The fiberglass separator, as taught by Okamura, and paper separator, taught by Schiffer, are shown as equivalent separators known in the art at the time of the invention. A cathode current collector is a metal mesh located between the cathode active material and the separator (Fig. 1; 2:1-40). So Okamura teaches arranging the similar components in a different manner based on design choice.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the arrangement of components based on the desired design of the battery. The two prior art illustrate that the arrangement does not alter the operation of the battery and as such combining the battery components according to known designs would be obvious to one skilled in the art at the time of the invention. Combining prior art elements according to known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).



Regarding claim 43, while a second fiberglass cloth is not taught between the collector and the peroxide material, the inclusion of a second fiberglass cloth would be obvious to one skilled in the art because the fiberglass cloth absorbs the liquid electrolyte. By including another cloth, more electrolyte is brought in contact with the cathode material allowing for increased contact and therefore increased ionic conductance between the anode and cathode.

Regarding claims 12-14, as discussed above, since the aqueous activator is not positively claimed and required by the claim language, the composition of the activator is also not further limiting to the claimed product.

Regarding claims 16, 17 & 39, the disclosure of Schiffer does not specifically disclose the ratio of the electrode bulk surface area of the anode to the electrode bulk surface area of the cathode. However, regarding claim 16, this is product-by-process and even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process (MPEP 2113). It is well known in that art that the optimal ratio is dependent upon physical configuration of the galvanic cell and the chemical reactions present.

Therefore, it would have been within the skill of the ordinary artisan to adjust the ratio of the electrode bulk surface area of the anode to the electrode bulk surface area of the cathode in accordance to the configuration of the electrochemical and the kinetics

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of the reaction. Differences in prior art ranges are unpatentable unless they produce a new and unexpected result, which is different in kind and not merely in degree from the results of the prior art. Discovery of optimum ranges of a result effective variable in a known process is ordinarily within the skill of art and selection of the optimum ranges within the general condition is obvious. (MPEP 2144.05)

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,005,246 (Schiffer) in view of US 5,476,730 (Okamura) and US 7,045,252 (Christian) as applied to claim 1 and further in view of US 4,001,043 (Momyer).

The teachings of Schiffer, Okamura and Christian as discussed above are incorporated herein.

Okamura is silent to using a woven silver plated copper wire for the cathode current collector.

Momyer teaches the cathode current collector metal can be any of nickel, iron or preferably silver and that the metal collector is in the form of a mesh (4:45-60). As such, Momyer teaches it is known in the art that silver is equivalent to nickel for a cathode current collector. Therefore, because these two metals are art recognized equivalents at the time of the invention was made, one of ordinary skill in the art would have found it obvious to substitute the silver metal mesh for the nickel metal.

The silver plated copper wire is equivalent to the solid silver wire. Since the same metals are used on the surface of the current collector, the metal used and the

function of the metals as the cathode current collector are equivalent. It would be obvious to one skilled in the art at the time of the invention to substitute a silver plated copper wire for the solid silver wire taught by Momyer in order to save on the fabrication costs of the battery.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,005,246 (Schiffer) in view of US 5,476,730 (Okamura) and US 7,045,252 (Christian) as applied to claim 1 and further in view of US 5,445,905 (Marsh).

The teachings of Schiffer, Okamura and Christian as discussed above are incorporated herein

Schiffer is silent to using potassium hydroxide as the electrolyte.

Marsh teaches the use of potassium chloride or potassium hydroxide as the electrolyte solution (3:54-68). Since Schiffer teaches the claimed invention except that potassium chloride is used instead of potassium hydroxide. Marsh teaches that the two electrolytic solutions are equivalent products known in the art. Therefore, because the two products/methods were art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the potassium hydroxide for the potassium chloride.

### ***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection as necessitated by amendment.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH WALKER whose telephone number is (571)272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

K. Walker

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795